

of yellow birch (*Betula papyrifera*) and northern red oak (*Quercus rubra*) were correlated with higher productivity, although overall, eastern hemlock (*Tsuga canadensis*) had the highest mean relative dominance. The nest tree SMR indicated that nest tree selection did not effect productivity.

PRESENT SOUTHERN BREEDING LIMITS OF THE BOREAL OWL IN NORTH AMERICA

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Existence of breeding boreal owls (*Aegolius funereus*) in North America south of Canada was unknown in the 1950s, but by 1989 residency of the species had been documented to the southern terminus of the Rocky Mountains in northern New Mexico. We conducted surveys using tape playback of the staccato song to consolidate distributional data in northern New Mexico (63 hr) and to search for the species in isolated mountain ranges in central and southwestern New Mexico (27 hr) and on the Colorado Plateau of Arizona (280 hr). Eleven additional records between November 1989 and August 1993, including two of fledged juveniles, firmly establish the boreal owl as a breeding bird in the Sangre de Cristo, San Juan, and Jemez Mountains of northern New Mexico. Response rates of boreal and northern saw-whet owls (*Aegolius acadicus*) in northern New Mexico were 0.15 and 0.08 owls/survey hour, respectively. In mountain ranges apparently not occupied by boreal owls, northern saw-whet owls responded at a rate of 0.11 owls/survey hour; their response rate was higher in New Mexico (0.44/survey hour in 27 hr) than Arizona (0.08/survey hour in 280 hr). This difference was most likely due to sample size and timing of surveys: summer-autumn in New Mexico, spring in Arizona. Potential habitat for boreal owls away from the Rocky Mountains was generally isolated, small patches that likely would not sustain minimum viable populations. We continue to believe that the boreal owl in the Rocky Mountains is a pleistocene relict, and the inhospitable nature of their high elevation spruce-fir (*Picea engelmannii*-*Abies* spp.) habitat during their most vocal period (February to April) hindered scientific knowledge. Palentological, archeological, and late 18th- to early 19th-century autumnal sightings in the southern Rockies support this view, despite current efforts to suggest a more recent range expansion.

NEST BOX FIDELITY AND DISPERSAL DISTANCES OF AMERICAN KESTRELS IN SOUTHWEST IDAHO, 1993-94

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Few individuals marked as breeding adults in 1993 returned to breed in the same box in 1994. Of 37 females marked as breeders in 1993, only three returned to nest in the same box in 1994; two of 22 males reused their 1993 boxes. Four males marked in 1993 moved to different boxes within the study area, 0.4 to 4.6 km from their 1993 boxes. Despite banding nearly 600 nestling kestrels in our study area, we have encountered only six breeding kestrels (five females and one male) that were originally marked as nestlings in the study area. Females moved an average 9.9 km from their natal boxes to their breeding boxes (range: 8.3-10.8 km; SD = 1.03), and the male moved 7.6 km. We suspect that our low return rate and the low reuse of boxes is associated with high mortality, availability of alternative nesting substrates, or a combination of the two

RED-SHOULDERED HAWK REPRODUCTIVE SUCCESS WITHIN POOLS 9-11 OF THE UPPER MISSISSIPPI RIVER, 1983-94

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Between 1983 and 1994, we monitored 84 red-shouldered hawk (*Buteo lineatus*) nesting attempts at 15 territories within the McGregor District of the Upper Mississippi River National Wildlife and Fish Refuge (pools 9-11). Of the 60 attempts with known outcomes, 43 were successful (71.7%) and 17 were unsuccessful (28.3%). The 43 successful nesting attempts produced 91 red-shouldered hawk fledglings, for an average of 2.12 per successful nest and 1.52 per nesting attempt. Production varied during the study period. Between 1983 and 1989, 20 of 24 (83.3%) nesting attempts were successful; a total of 49 fledglings were produced for an average of 2.45 per successful nest and 2.04 per nesting attempt. However, between 1990 and 1994 production was considerably lower; of 36 known outcomes, 23 (63.8%) were successful and average number of fledglings dropped to 1.83 per successful nest and 1.17 per nesting attempt. Red-shouldered hawk reproduction was especially poor during the record floods of 1993. Flood waters covered shallow wetlands and other feeding areas as well as many of the nest sites causing fledglings to drown when they left the nest. Only four (36.4%) of eleven attempts were successful and the number of fledglings dropped to 1.24 per successful nesting attempt and 0.45 per nesting attempt. Also, during the following season, at least four confirmed nesting territories were abandoned, and we observed only one juvenile red-shouldered hawk. Consequently, we suspect that replacement rates within the study area may not be satisfactory.